The Planters' Chronicle.

RECOGNISED AS THE OFFICIAL ORGAN OF THE U. P. A. S. I., INCORPORATED.

VOL. VIII. No. 22.] MAY 31, 1913. [PRICE AS. 8.

THE U. P. A. S. I.

(INCORPORATED.)

Contents.

For the first time for a very long time the *Chronicle* is issued without an article from his hand or from the U. P. A. S. I. Scientific Department owing to the Planting Expert's absence on leave, and the railway strike which has prevented his contribution coming to hand.

Under the heading of correspondence a letter is published by "Sufferer" which is answered by Mr. Anstead, and shows how different are the conditions ruling on the Nilgiris and in Mysore.

Also, as affecting Tea Freights, we regret that an error on the part of the Printers, made Mr. Clarke's letter read incorrectly. We draw atttention to the paras in that letter which are now correctly stated.

The Planting Member issues a Note pointing out the misleading inference drawn from his Speech in the Legislative Council of Madras, at the Budget Meeting, by the *Times of Ceylon*, an inference that no fair-minded man could possibly have drawn from it.

A description of the methods of collecting Rubber in the Kasai District of the Congo is published, which increases our knowledge of a Rubber Producing country.

Soil Fertility and how to maintain it is, and must always be, a matter of interest to the Planting Community, and much is due to the United States Department of Agricultural Bureau for the interest roused in this important question.

Allied to the same question is that of the Chemistry of the Soil which is one which is continually discovering new wonders of the soil to the advantage of the agriculturist, if he will only profit by the discoveries.

Differing as the soils of the East do from those of the West, in constituency and climate, the proposals put forward to create a Tropical University or College where research work, pertaining to Eastern soils would receive close attention and turn out students with practical knowledge of the soil, should receive every support.

At a time when Sprayers are being inquired about, the award of the Spraying Trials at Wisley should prove interesting.

CORRESPONDENCE.

Green Bug.

Kinnacoorie Estate,
Kilkundah P. O.,
Nilgiris, 21st May, 1913.

THE EDITOR,
Planters' Chronicle,
Bangalore.

Dear Sir,—With regard to the treatment described on page 196 of Vol. VIII, am I correct in understanding that directly a shoot is found with Green Bug on it, it is cut off? As all new shoots seem to get covered with bug before they have grown many inches will not the constant cutting off of all shoots, and thereby keeping the trees constantly bare of leaves, affect the health of the trees before long?

"SUFFERER."

THE EDITOR,
Planters' Chronicle,
Bangalore,

Dear Sir,—I notice that your correspondent, "Sufferer," writes from the Nilgiris where the Green Bug problem is a very different one to that in Mysore. In the Nilgiris the pest has been established for many years and the jungle and even the shade trees are infested with the scales. There is little co-operation; while one man may clear up his estate his neighbours do nothing and, consequently, it is quickly re-infested.

In Mysore the pest has only just appeared, and comparatively small areas are attacked, and an attempt is being made to eradicate it at once by pruning off as many of the infested shoots as possible and burning them and then spraying. It is hoped to discover the source of the attack and take steps to prevent future infection. If all the planters in the infested area combine to carry out these methods there is every chance of eradicating the Bug.

In the Nilgiris this cannot be done under existing conditions, and, as your correspondent says, one cannot keep on constantly pruning off all the young shoots. He must depend upon spraying or brushing methods to keep the pest in check.

Yours faithfully,

(Signed) RUDOLPH D. ANSTEAD,
Planting Expert.

Referring to Mr. Clarke's letter of May 9th, in issue of May 17th, Paras. 3, 4, and 5 should read as follows:—

"The Freight from Mettapollium to Calicut is 10 annas a F/C of 120 lbs. as there is *no* concession, from Calicut to Madras Harbour there *is* a concession, and the rates are as follows: 11 annas 1 pie per F/C and 5 annas 8 pies per H/C. From the above figures you will see that it will only cost me 4 pies more per F/C to send it from Mettapollium to Calicut and then back from Calicut to Madras, than to send it direct from Mettapollium to Madras Harbour."

NOTE BY THE PLANTING MEMBER.

An article appeared recently in the "Times of Ceylon" which purported to deal with my remarks at the Budget Meeting of the Madras Legislative Council.

The article seemed to me to be misleading, so I sent, at once, a letter to the *Madras Mail* with a view to correcting any false impression that might have been created. Without amplifying what I said to any extent I think I should point out in the *Chronicle* that not only did I make no request of Government, but that it was impossible for me to do so. Nearly every association holds a different view of the labour question, and the views of individuals in the local associations differ also.

This was very apparent at the last United Planters' Association of Southern India Meeting and in consequence a Committee was appointed to consider the whole subject and if possible to suggest a course that may prove acceptable to all. It is obvious, therefore, that I can take no action until this Committee has completed its difficult task, and until its recommendations have been accepted by the delegates at Bangalore.

When speaking in Madras I wished to touch as shortly as possible on all the questions that affect us, and if the labour question took the prominent place the reason is obvious; it is of general interest, whereas the question of roads, railways, etc., though important, is of local interest only.

I had no intention of committing planters to any definite policy and I believe that any one who reads what I said fairly will admit that I have not done so.

(Signed) E. F. BARBER.

JAPAN.

The following information is from the report by the Acting British Consul at Shimonoseki (Mr. H. Horne) on the trade of that district in 1912, which will shortly be issued:

Fertilisers.—The year 1912 witnessed a strong and constant demand for *Indian rape cake*, of which nearly 15,000 tons were imported to Shimonoseki. Fertilisers in general and rape cake in particular are becoming increasingly popular with local farmers. The chemical qualities of this cake are so well adapted to the growth of tobacco, rice, &c., that the demand is certain to show a very material increase during the current year. *Bone meal* and *bone dust* are imported from Corea, China and India, but they are found less satisfactory than rape cake.

Sulphate of ammonia and nitrate of soda have given way to rape cake, which is much cheaper; the importation of the former, however, has increased considerably owing to the demand of the local ice factories, which have sprung into existence concurrently with the development of the trawling industry (see p. 263 of the "Board of Trade Journal" of 31st October, 1912). These factories have daily outputs ranging from 30 to 200 tons; when all are working at full capacity the daily output is nearly 500 tons of ice.—*The Board of Trade Journal.*

RUBBER.

Rubber Industry of the Kasai District of the Congo.

The following particulars regarding the rubber industry of the Kasai District of the Congo State have been received from H. M. Vice-Consul for the Kasai Province (Mr. H. H. Castens) :—

Wild Rubber.—Vast forests of rubber-yielding lianas or vines abound throughout the greater part of the Kasai as far south as latitude 6, and it is the latex from these vines which, when collected by the natives and bartered to Europeans, forms the principal industry of the district.

The following are the most common varieties of liana, and those which produce the best rubber :—

Landolphia Owariensis, which is perhaps the best known liana, is found throughout the district. It is a vigorous vine often attaining a length of 300 feet and a circumference at the base of 18 inch, and has been known to yield 33'35 ozs. of latex in one year. The best quality of rubber produced from this tree is known as the "Kasai Rouge," but the natives are not disposed to incur the extra labour of clearing entailed in its production, and so most of the rubber from this tree is sold in an inferior form known as "Kasai Noisettes," which sell for about 11 francs per kilog. (about 4s. per lb.) at Antwerp.

Landolphia Centilii possibly only a variety of *L. Owariensis*, which is considered by some people to produce the next best rubber, is found in almost all the forests. It is a strong healthy vine often reaching a length of 250 feet, with a circumference of 10 inch.

Clitandra Orientalis (—C. Arnoldiana) is widely scattered throughout the district. Its latex coagulates less rapidly than that of the above-mentioned two lianas. When thoroughly cleaned and boiled it produces a rubber known as "Casai Noir I," fetching about 12'50 frs. per kilog. (about 4*s.* 6½*d.* per lb.) at Antwerp.

Landolphia Klainei flourishes in all forests bordering on the river. When immersed in boiling water the latex yields an excellent black rubber.

Landolphia Thollonii, or grass rubber, is only found in the more open country in the southern portion of the Kasai, where it grows profusely. It is remarkable for the manner in which its roots penetrate some 7½ to 9 feet into the soil, its rhizomes forming thick clusters beneath the surface. The natives pound the grass and roots into a pulp, in order to expel as much dirt and wood as possible. The residue is rolled into balls, which are threaded on sticks and are then ready for sale. On account of the dirty state in which this rubber is sold it only realises about 6 or 7 frs. per kilog. (about 2*s.* 2*d.* to 2*s.* 6*d.* per lb,) in Europe, but it is said that the rubber from the *Thollonii* is of excellent quality when properly cleaned.

Various other rubber-producing lianas grow on the Kasai but the product is of very inferior quality.

Collection.—The usual method of bringing the rubber to market is briefly as follows :—White managers are placed in charge of posts in suitable spots and supplied with a good stock of goods for barter. The principal articles exchanged are lengths of cotton cloth (indigo drill), blankets, salt, &c. These managers employ native overseers or "capitas", who are supplied with trading goods for which they agree to provide a certain quantity of rubber. The "capita" in his turn, pays the native rubber collector in

advance to go into the forest to obtain the rubber. This is the general system, but the native collectors themselves sometimes bring the rubber to the posts or towns, where they sell it to the best advantage. The traders must then dry the rubber, as otherwise it would lose something like 20 per cent. of its weight in transit to Europe, and the majority usually clean it as well. The rubber is then packed in grass bags of about 30 kilogs. (66 lbs). and sent to a post on the river Kasai or Sankuru, whence it is despatched to Europe. The approximate cost of a kilogramme (2·204 lbs.) of rubber despatched from Lusambo to Europe is as follows:—

			Francs.
Freight—			
Lusambo to Leopoldville	...	...	·11
Leopoldville to Matadi (rail)	..	...	·45
Matadi to Europe	...	...	·9
Taxes—			
Export duty	... 60 centimes.		
Import general	... 75 ,,	...	
Taxe de plantation (for wild rubber only)	... 40 ,,	...	1·75
Incidental expenses (agency, &c.)		...	·20
		Total francs...	2·60

equivalent to 2*s*. 1*d*.

With the exception of the steamers plying between Leopoldville and the different posts on the rivers Kasai and Samkuru, and on the river Lukenge between Dekese and Mushi in the north, there are no means of transport other than the native carrier.

General Remarks.—It is estimated that from 1,800 to 2,000 tons of rubber are exported annually from the Kasai, of which the Kasai Company *probably furnish two-thirds; no statistics on the point are, however, avail*able.

The "Domaine de la Couronne," which is now thrown open to trade, abounds in wild rubber, though recent trouble with the natives may have debarred people from trading there to any extent. For similar reasons many other parts of the Kasai have hitherto been left untouched, but as the country becomes more civilised it seems probable that those who are first in the field should reap a rich harvest. The country in the neighbourhood of Basongo, on either side of the Kasai river, is said to be very rich in lianas, but few traders have yet commenced operations there.

Samples of various rubbers produced in the Kasai may be seen by British firms at the Commercial Intelligence Branch of the Board of Trade, 73, Basinghall Street. London, E. C.—*The Board of Trade Journal.*

SWEDEN.

Proposed Reduction of Duty on Superphosphates.

The Board of Trade are in receipt, through the Foreign Office, of information to the effect that a motion to reduce the Swedish Customs duty on superphosphates from 25 to 10 ore per 100 kilogrammes is under the consideration of the Swedish Legislature.

(Krona (100 Ore)=1*s*. 1½*d*.; 100 kilogrammes=220·46 lbs.).—*Board of Trade Journal.*

SOILS.

Soil Fertility and How to Maintain It.

The factors determining soil fertility are slowly being disentangled, but they are far from being fully known. Soil fertility is a condition of the soil and cannot be gauged by a chemical analysis of the soil which gives the total amount of plant food only as it depends on a great many factors, the texture of the soil, the rainfall, the amount of lime present in the soil and the action of bacteria, etc.

The texture of the soil can be improved by cultivation, the addition of organic matter, and in the case of stiff clay soils by the application of lime. Soil fertility depends partly upon the action of bacteria such as those that bring about the decay of nitrogenous bodies in organic matter, the final products being ammonia or nitrates, or that manufacture nitrogenous plant-food from the nitrogen of the air, as yet very little study has been given to soil bacteria in the tropics, all our knowledge is got from the study of soils in temperate climates, where conditions as to heat, moisture and soil chemistry are quite different. There are many kinds of bacteria in the soil and they occur in tremendous numbers, but those we are interested in, are the ones which elaborate nitrogenous food for plants. There are two groups, those which live in nodules on the roots of leguminous plants, such as tephrosia and dhaincha, and supply them with nitrogenous food, and those which live independently in the soil. Of the latter there are two varieties, those that break up organic matter and form salts of ammonia and on the nitrifying bacteria which form compounds of ammonia into nitrates, nitrates cannot be formed without basis, thus it is essential to have a plentiful supply of such bases as lime, potash, magnesia and soda in the soil, the most important of these is probably lime. Soils cultivated and uncultivated are usually acid in reaction and acidity of the soil is detrimental to nitrification, thus a minimum of acidity must be aimed at. Yet it might be said that a certain amount of acidity in the soil may be advantageous, as the acids will assist in liberating mineral food from the soil particles. Nitrifying bacteria require oxygen, thus to have conditions most favourable for nitrification the soil must be well aerated, good drainage and cultivation are essential for the perfect aeration of the soil. In a badly drained, water-logged soil, air is excluded and in the absence of oxygen denitrification takes place, that is, the nitrates are broken up and nitrogen liberated.

Recently soil investigations have discovered that it is possible to increase soil fertility by the use of sterilising agents, such as heating the soil to a high temperature or by the use of toulene, phenol, etc. It is found that such treatment is responsible for the destruction of organisms, which prey upon the useful bacteria and after treatment the nitrogenous food, forming bacteria, increase rapidly in numbers and become much more prolific than previously.

For some years the United States Department of Agriculture Bureau of Soils has maintained that infertility might and not infrequently does arise from the presence in the soil of toxic organic substances, excreted by the plants through the roots, but the toxicity is much reduced by the application of well-proportioned manure, but it is doubtful whether all plants normally excrete toxic substances.

It is recognised in almost all parts of the world, that it is necessary to keep up the soil fertility by approved methods. It is, therefore, necessary to

find means to prevent deterioration, as well as to arrest it, where it is already in evidence. The tendency should always be towards improvement, for there is no soil which is absolutely perfect and under continuous cropping there is a permanent lessening of the available plant foods in the soil and to restore these a systematic employment of green crops and artificial manures should be practised.

The objects to be sought for in manuring may be briefly classified as follows:—

(*a*) The maintenance of the fertility of the soil and the health of the tea bushes.

(*b*) The increase of the yield per acre.

(c) The improvement in the quality of the tea.

The first of these is of the utmost importance for on it depends the permanence and future value of an estate. As regards tea properties noted for the depth and fertility of their soils, the intrinsic advantage they possess is very decided and as a consequence the need of artificial manures in their case is reduced to a minimum, as compared with other estates, where the tea and yield are inferior and the soil partially exhausted or originally of an indifferent character In both cases, however, the same care and attention are necessary to ward off deterioration of the tea. The commencement of deterioration is very often unnoticed or is only perceptible in the gradual reduction of the quality of the crop.

The actual yield per acre may in many cases continue well up to the average or even show an annual increase due to closer or more systematic plucking, yet at the same time the vitality of the bushes may be lessening and the supply of naturally available plant food material failing.

For estates with average soil or those where the tea is backward and the yield not more than 5 maunds per acre, the most economical treatment to employ in order to improve the condition of the property, is to adopt a thorough system of cultivation combined with the application in sufficient quantity of a well-proportioned artificial manure mixture—A. S.—*Indian Planters' Gazette and Sporting News.*

THE WATERING OF CUTS IN RUBBER TREES.

A paper has recently been published in the *Agricultural Bulletin of the Federated Malay States* (Volume I, No. 7) which is important from two points of view. In the first place it contains results that are likely to be of practical value, and in the second place it affords an example of an original investigation that has been undertaken by a planter. The first experiment in the investigation was designed to show whether the commonly practised custom of watering cuts lengthened or shortened the duration of the dripping period. In round numbers it was found that when the cut was watered the tree continued to drip for eighty-one minutes, when the cut was not watered, for 102 minutes: that when the tree was watered it yielded 250 drops, when not watered 510 drops. A second and more extensive experiment led to the astonishing conclusion that one thousand trees would give about ¾lb. less rubber a day if water were poured on the cuts than they would give if the cuts were not watered.

The reason for this appears to be that the addition of water induces coagulation.—*The Agricultural News.*

SELECTED CUTTINGS.

The Chemistry of the Soil.

Considerable progress is being made in the important problem of the chemistry of the soil, and the investigations in this subject are being pursued nowhere so vigorously as in the laboratories of the United States Bureau of Soils.

Until recently our knowledge of soil chemistry was curiously vague. The mineral constituents were, of course, well-known, but the all-important organic substances which together constitute the humus were all but uninvestigated. This is the more surprising since, as all cultivators know, the constituents of humus are of vital importance in determining the value of a soil.

The work of isolating the various organic constituents of humus is of necessity laborious, yet it must be done if the biological value of these several soil-constituents is to be discovered.

The recent investigations of Mr. E. C. Storey (Bulletin 88 U. S. A. Dept. of Agriculture) have brought the number of known organic soil compounds up to 35, and it is certain that this considerable number will be increased enormously as a result of further investigations.

Of these 35 substances 13 are organic acids, 9 are organic bases, 3 are carbo-hydrates, 2 aldehydes, others are organic compounds containing sulphur or phosphorus, others again belong to the chemical classes of alcohols, hydro-carbons, etc.

Cultivators, no matter how lacking they may be in chemical knowledge, cannot fail to note with interest the general results of this chemical investigation of the soil; for the chemical composition of the soil plays a large part in determining soil fertility. On it depends not only the degree of growth of the plant he cultivates; but also, as it may be predicted, it controls the fungous and bacterial flora of the soil. With advance of knowledge of soil chemistry we may expect a much surer insight into the many mysteries of the soil—its harbourage of pests, its powers of recovery of fertility, and the like—which mysteries, though appreciated by the grower, baffle the wit of the scientific student.—*The Gardeners' Chronicle.*

Abyssinian Substitute for Tea.

At the opening meeting of the session in Edinburgh of the Pharmaceutical Society of Great Britain, the inagural address was given by Professor Ralph Stockman, who took as his subject "Stimulant Narcotics," with a special account of *Catha edulis*. The Swedish Botanist, Forskal, who died in Arabia in 1768, was the first to draw the attention of Europeans to the leaves of *Catha edulis* as a stimulant. The plant grows wild in Abyssinia and the neighbouring mountainous districts along the coast of East Africa. Its use is said to be older than that of coffee. The leaves have a pleasant aromatic odour, and an infusion made from them has a markedly sweet and stringent taste, somewhat resembling liquorice. In the social life of the Arabians and Abyssinians the leaves play much the same part as tea, coffee, cocoa, and other well-known stimulant narcotics do among other peoples. Professor Stockman had obtained three alkaloids in a state of purity, to which he gave the names of *cathine, cathidine* and *cathinine*. The first had an action something like a combination of morphine and caffein. *Cathinine* had not the same drowsy or depressing effect on the brain, but acted more as a stimulant to the spinal cord. *Cathidine* acted as a muscle poison and a slight stimulant to the nervous system. Broadly speaking, the action of the leaves was essentially comparable to that of other vegetable products which are used by mankind as stimulant narcotics.—*The Statesman.*

Carbon Bisulphide.

"The Agricultural Journal of the Companhia de Mocambique" has the following useful information on the value of carbon bisulphide :—

This chemical is chiefly known on account of its use against weevil, which is so often found in stored maize and rice. In order to encourage the use of this valuable insecticide the following notes have been prepared from "Farmers' Bulletin No. 145," issued by the United States Department of Agriculture, in the hope that they may be useful to farmers and others living in this territory :—

Carbon bisulphide is a colourless watery liquid, which is one-fourth heavier than water. It is very volatile, evaporating with great rapidity when freely exposed to the air. The rapidity of evaporation depends mainly upon the area of the surface and the temperature of the air. Water will float on the top of carbon bisulphide just as paraffin floats upon water. In a general way it is correct to say that carbon bisulphide is applicable only where its vapour can be more or less confined. It is especially useful in dealing with insects which cannot be reached by poisoning their food or by spraying. The vapour must be confined in order to maintain a sufficient proportion of it in the atmosphere to prove fatal to insect life. It tends most strongly to spread outward and downward on account of its weight, and though it will gradually work upward its greatest density will be at the lowest levels ; 1 lb. of carbon bisulphide is usually employed to each 1,000 cubic feet of space treated, whether for insects in buildings or in the ground. This amount gives an atmosphere of 1 part of carbon bisulphide to 90 parts of air, which is fatal to insect life in a short time. Where the atmosphere cannot be absolutely confined and the vapour may escape, two to four times the above amount may be necessary. In an atmosphere of 1 part carbon bisulphide to 90 parts of air, all insects perish in a few seconds ; while in an atmosphere of 1 part carbon bisulphide to 254 of air, 1½ hours are required for their destruction. The same result is, therefore, obtained by a small proportion of vapour acting through a long time as by a large proportion acting for a short time.

Destruction of Ants.—By this means ants also may be destroyed. One or more holes are made in the nest with an iron bar 1 or 2 feet deep, and 1 or 2 oz. of carbon bisulphide are poured into each hole. The holes must then be immediately stopped up. A wet blanket put over the nest will help to confine the fumes. It may also be used for mole crickets living below ground.

Treatment of Stored Products.—Agricultural products are often stored in large quantities, and after a time become badly infested with insects. Beans, peas, maize, rice, wheat, tobacco, &c., &c., may all be affected. All buildings to be treated should be made as air-tight as possible, and the dishes to hold the liquid should be placed high above the floor. Shallow tin pans or plates make good evaporating dishes. The larger the evaporating area the better. There should be 1 square foot of evaporating surface to every 25 square feet of floor area, and each square foot of evaporating surface should receive from ½ lb. to 1 lb. of the liquid. When all the dishes have been filled, the place should be locked up for at least 24 hours. Thorough ventilation must be given for one or two hours before the building is again used. The vapour disappears rapidly in the open air, and after one hour there will be ordinarily no danger of entering a building which has been treated.

Seeds.—For the destruction of insects attacking seeds nothing equals carbon bisulphide. The seed to be treated should be placed in barrels, bins, or rooms, care being taken to have the receptacle tight round the sides and

bottom. In such cases carbon bisulphide is generally applied at the rate of 1 to 1½ lb. to each 1,000 cubic feet of space, which is the capacity of a room 10 feet each way. A barrel would require more in proportion unless it were very tight. Heavy blankets or oilcloth may be used to cover small bins or barrels. The receptacle can be tightly closed for 24 to 36 hours, with perfect assurance that the germinating power of the seed will not be injured. The United States Department of Agriculture conducted experiments with carbon bisulphide upon 54 varieties of seeds. They were exposed to an atmosphere saturated with carbon bisulphide vapour for 48 hours. Under this extreme treatment, the severity of which would never be equalled in practice, the majority showed no injury. The seed of the grass family appeared more tender than others, and some suffered seriously. Those varieties injured in the first trial were treated again, but exposed for only 24 hours to a saturated atmosphere. The injury was markedly decreased in all cases. Experiments were also made upon grain in bulk, using 1 lb. of liquid to 100 bushels of grain, the exposure lasting for 24 hours. In this case no difference could be detected even in the most delicate seeds.

Effect upon Foodstuffs.—The opinion of those who have used this insecticide in mills, stores, &c., is that the vapour has no ill effect upon food. In fact no foodstuff has yet been found to be injured by exposure to carbon bisulphide vapour. By an annual application of carbon bisulphide to all mills, stores, &c., where grain and foodstuffs are kept, much, if not all, injury by insects would be avoided.—*The Queensland Agricultural Journal.*

Awards of the Spraying Trials.

A report of the spraying trials held at Wisley on the 23rd ultimo was published in the issue for April 26, p. 274. The following recommendations of the judges have been approved by the Council:—

Syringes.—Awards of Merit to Four Oaks Undentable (Angle Bend excluded) and Abol Syringe (E. A. White, Ltd.). *Commended*: Corry's Syringe and Purser's Arnold Sprayer No. 2.

Bucket Sprayers.—Award of Merit to Boundary Co., Demon Continuous Spray Bucket Syringe.

Continuous Pumping Knapsacks.—Awards of Merit to Abol (E. A. White, Ltd.), and Two Continuous Knapsacks Eclair No. 1 and Etame (Cooper, Pegler and Co.). *Highly Commended*: Four Oaks Centre Knapsack Pump. *Commended*: Benton & Stone's Continuous Pumping Knapsack.

Large Pneumatic Sprayers.—Highly Commended: Hartjen Battery Filler and Holders.

Large Continuous Pumping Sprayers.—Highly Commended: Four Oaks Large Continuous Pumping Battery Sprayer, and *Commended*: Utility (Benton and Stone).

Hand Diffusers.—Highly Commended: Alpha Hand Diffuser, Alpha Extinguisher Co. *Commended*: Vermorel Hand Diffuser, Cooper, Pegler & Co.; Holder Hand Diffuser, Hartjen; Hand Diffuser No. 1.807, Benton & Stone.

Nozzles.—Highly Commended: Four Oaks Nozzles.

The Judges considered the provision of means of carrying accessory nozzles on the hand syringes would be a great improvement. None had such a provision. In using some spraying materials the provision of a strainer on the intake nozzle would be an advantage. W. Wilks, Secretary.—*The Gardeners' Chronicle.*

The Proposed Tropical University.

The proposal to create a tropical university which has been put for-

ward in the columns of *Nature* and elsewhere is one which requires careful scrutiny and calls for a clear appreciation of the real issues involved.

It seems at least open to question whether the advocates of the scheme really contemplate a new university, or whether they are not rather thinking of a college or institute of university rank, the work of which should be somewhat intimately associated with the promotion of the material prosperity of the great agricultural interests that are growing up in the tropics. Such a college, in addition to the function of inducting men into the various branches of tropical agriculture, should serve, if properly staffed and organised, as a centre for the dissemination of current information on matters pertaining to the industrial needs of the community, in so far as agricultural needs of the community, and so far as agricultural problems are concerned. For this purpose it is essential that facilities for field and other experiments should be fully provided, and if the site were suitably chosen the college would prove an invaluable training ground, not only for the population resident within its immediate geographical area, but for others also, and especially perhaps for Europeans, about to engage in agriculture in any part of the tropics. Various places have been suggested as possible sites, and there is much to be said in favour of the West Indian proposal. Easy access from Europe, as well as the variety of soil, climate, vegetable products, &c., are all points in its favour, whilst the fact that no British institution of the kind desired exists in that region more, the possibility of securing a considerable range of advantages within a relatively small geographical area is of itself a distinct gain, for it could be more economically worked than a similar institute in a large continental area, where things are on a larger scale, quite apart from limitations imposed by a continental climate, which cannot be ignored.

Accepting for the moment the desirability of founding a college of the kind indicated, the danger that lurks in the scheme would almost certainly be found, in practice, to consist in a desire to see immediate results which would be convertible into a cash value by the planters. In order to ensure success, it is absolutely essential that a wise and far-sighted policy should guide the destiny of the institute. Agricultural problems, and especially tropical problems, are seldom simple, and while immediate practical objects need not, and should not, be lost sight of, the college would fail to justify its creation if it were to exist for these purposes alone. It must, while not neglecting the practical training of students in tropical agriculture, also include within itself, as a vitally essential part a body of first-rate scientific investigators and teachers, who will be able to seize upon problems and work them out. There must be no attempt to limit their work to the economic questions of the moment, for in cramping the spirit of investigation lies the way of throttling material progress.

Such a staff would, of course, cost money, and often the return might seem to be slow in coming, but it is impossible to over-estimate its importance. Indeed, unless a proper staff can be provided, the scheme is not worth pursuing, for the most that could then be hoped for would be a mere technical institute—a sort of edition *in parvo* of current planting practice, veneered over by a fallacious appearance of scientific equipment.

Now an institute such as is here foreshadowed would greatly gain by connection with leading institutions in this country. Science is growing apace, and particularly those branches of it which especially touch on agriculture. And, however able the staff, it could not hope to escape from the disadvantages inherent in a separation from the main clearing-houses of scientific thought. Some sort of association, then, with home institutions, such as the University of Cambridge, and the Imperial College of Science

and Technology, for example, could not fail to be of advantage to all concerned. An association of this kind ought to be a real and not a merely nominal one, for only in this sense could it serve any useful purpose and provide for an interchange of knowledge and for the stimulation of ideas. Arrangements might, perhaps, be made for enabling suitable students of the college to visit this country and be received for a time in the home institutions, and *vice versa*.

Such a college, conceived and maintained on generous lines, would develop into a valuable asset to the Empire, and would exert a powerful influence in furthering the interests and objects of tropical agriculture within it.

Moreover, a centre of real university learning, and still less of culture, can scarcely be created by the stroke of an administrative pen, and it would, in any event, be compelled to seek its justification in the existence of a population large enough and able in other respects to utilise the advantages the university ought to be in a position to confer. And it seems open to inquire whether a mere fraction of the financial resources which would be needed for the more ambitious project might not amply suffice to enable everyone of marked ability to enter an existing university elsewhere, if he (or she) were otherwise unable to do so. There would be many disadvantages inseparable from a small insular university, and it is scarcely necessary to dwell on them here. For the present it may suffice to remark that a second-rate university is not worth its upkeep, whilst a properly staffed and equipped one would demand very considerable funds, and not only so, but other claims, difficult to meet, would also have to be satisfied.

The further one reflects on the matter the weaker does the case for the establishment of the university, and the stronger the claims for the foundation of an agricultural college, appear. Almost all the arguments which can be urged against the first proposition can be used in support of the latter. But it may be that after all a substantial agreement already prevails amongst the majority of those who are advocating the scheme, and that an agricultural college of university rank is really what is desired.—J. B. F. —*Nature*.

It would appear from the recent annual report of the Decimal Association that the General Medical Council has announced that all measures and weights in the new British Pharmacopœia, including those referring to dosage, will be in the metric system, and that in order to facilitate the use of the work by medical men, the equivalents for dosage will also be given in the Imperial system. Further progress is also reported in connection with the adoption of the metric carat of 200 milligrams as an international unit for the sale of diamonds and precious stones. Owing, no doubt, to the steady advance made by this unit on the continent, the views of the trade in this country with respect to it appear to have undergone considerable change recently, and to be now generally in favour of the legalisation of the metric carat. It is confidently expected that steps will be taken very shortly by the Government to issue an order in Council legalising the metric carat as well as a series of multiples and submultiples of that unit. The effect of this legislation will be to render the present arbitrary and unrecognised carat illegal and to bring the weights and balances used by merchants and dealers for the sale of precious stones by weight under the purview of the local inspectors of weights and measures. A law has recently been passed in Belgium making the use of the metric carat obligatory in that country, and it is anticipated that a similar step will be taken at an early date in the United States, and possibly also in Russia.—*Nature*.